

REMARKS

The Examiner has rejected claims 1, 5, and 6 under 35 U.S.C. §103(a) as unpatentable over Hemingway et al. (U.S. 2004/0093853) in view of Hoard et al. (U.S. 6,363,714) and claims 10, 14, 15, and 17-21 as being unpatentable over Nakanishi et al. (U.S. 7,043,902) in view of Hoard et al. (U.S. 6,363,714). Applicants have amended independent claims 1, 11, and 19 to include: "to initiate diagnosis of the nonthermal plasma discharge device." Applicants submit that such amendment adds no new subject matter in added by such amendment; in particular, Figures 4 and 5 show flowchart examples of diagnostic procedures according to aspects of the present invention.

Rejection of claims 1, 5, and 6

The Examiner alleges that: "Hemingway discloses...controlling the power of the plasma based on the concentration of the NO_x in the exhaust gas..." First, Applicants are baffled by such statement because this is not an element of any of Applicants' claims. Secondly, Hemingway, et al. do not show controlling power of the plasma based on NO_x concentration. Instead, Hemingway, et al. show controlling power of the plasma device to maintain a desired temperature within the device.

Applicants' claim 1 contains the limitation: "reducing power to the nonthermal plasma discharge device to initiate diagnosis of the nonthermal plasma discharge device." Hemingway, et al. consistently teach: "The controller...can control the power supply to maintain the reactor temperature at the desired temperature," paragraph 0014. Paragraphs 0015-0018, 0023, and 0024 contain similar discussion concerning controlling power to maintain a temperature in the reactor. No where do Hemingway, et al. discuss reducing power to initiate diagnosis.

Hoard et al. teach: "controlling power to a plasma-catalyst...in accordance with...values of engine or vehicle operational parameters in order to optimize emission reduction versus energy cost." No where do Hoard et al. discuss "reducing power to...diagnos[e]." Applicants respectfully submit that because neither reference shows such limitation of Applicants' claim 1 that combining the references, even if proper to do so, would also not show applicants' claim 1. Applicants request withdrawal of the rejection to claim 1 and claims 5 and 6 which depend therefrom.

Rejection of claims 10, 14, 15, and 17-21

The Examiner alleges that: "Nakanishi discloses...controlling the power of the plasma based on the concentration of the NO_x in the exhaust gas..." Applicants submit that Nakanishi does not show controlling the power of the plasma, except in column 12, lines 6-15, in which the adjustment is made to provide a desired electric field intensity and power density, not based on providing a desired concentration of NO_x. Instead, Nakanishi shows: "The controlling device 9 is composed so that the reducing agent adding means 10 controls a timing to supply a reducing agent, based on a temperature detecting signal output from a temperature..." in column 7, lines 21-26. Similar references to controlling the reducing agent supply based on temperature are found in column 7,

lines 2-3, lines 8-11, lines 20-67 and in column 8, lines 1-4 and 63-67. Again, Applicants are uncertain why the Examiner has alleged that Nakanishi shows: "controlling the power of the plasma based on the concentration of the NOx in the exhaust gas" because this is not an element in any of Applicants' claims.

Applicants' claim 10: "reducing fuel supply to the nonthermal plasma discharge device disposed in the exhaust of an internal combustion engine to initiate diagnosis of the nonthermal plasma discharge device." Nakanishi et al. adjust reducing agent based on a temperature detecting signal, not to initiate a diagnostic procedure. Neither do Hoard, et al. show reducing fuel supply to initiate diagnosis. Because neither reference show such limitation, the combination, if proper, also does not show such limitation. Applicants respectfully request that the rejection to claim 10 and to claims 14 and 15 which depend therefrom be withdrawn.

Applicants' claim 19 contains: "said electronic control unit reducing supply of an energy quantity to said nonthermal plasma discharge device to initiate diagnosis of said nonthermal plasma discharge device." Neither reference show such limitation and their combination also does not show such limitation. Applicants respectfully request withdrawal of the rejection to claim 19 and claims 20-22 which depend therefrom.

No other art is cited in the Office Action. Based on the foregoing comments, the above-identified application is believed to be in condition for allowance, and such allowance is courteously solicited. If any further amendment is necessary to advance prosecution and place this case in allowable condition, the Examiner is courteously requested to contact the undersigned by fax or telephone at the number listed below.

Please charge any cost incurred in the filing of this Amendment, along with any other costs, to Deposit Account 06-1510. If there are insufficient funds in this account, please charge the fees to Deposit Account No.06-1505.

Respectfully submitted,

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